CLAIMS

1. A method for implementing a fast adaptive algorithm for obtaining finite impulse response filter coefficients for a time domain equalizer filter, the method comprising the steps of:

adaptively computing at least one equalization delay parameter; and

adaptively computing at least one time domain equalizer filter coefficient based on the equalization delay parameter.

2. The method of claim 1, wherein an overall channel impulse response length is shortened within a given target length.

3. The method of claim 1, wherein the step of adaptively computing the equalization delay parameter further comprises the step of:

computing an estimate cross-correlation function.

4. The method of claim 3, wherein the step of adaptively computing the equalization delay parameter further comprises the step of:

defining a variable as an argument maximizing an absolute value of the cross-correlation function wherein the variable represents a peak location for the absolute value of the cross-correlation function.

5. The method of claim 4, wherein the step of adaptively computing the equalization delay parameter further comprises the step of:

selecting an equalization delay as a function of the variable.

6. The method of claim 1, wherein the step of adaptively computing the time domain equalizer filter coefficient further comprises the step of:

minimizing mean square error criterion.

7. The method of claim 1, wherein the step of adaptively computing the equalization delay parameter further comprises the step of:

implementing one or more of training sequences and received sequences.

8. The method of claim 7, wherein the training sequences comprise consecutive samples of a received signal.

9. The method of claim 1, wherein the time domain equalizer filter is a sample spaced finite impulse response filter.

10. The method of claim 1, wherein the time domain equalizer filter is a fractionally spaced finite impulse response filter.

11. The method of claim 1, wherein the time domain equalizer filter minimizes one or more of energy inter symbol interference and inter channel interference.

12. A system for implementing a fast adaptive algorithm for obtaining finite impulse response filter coefficients for a time domain equalizer filter, the system comprising:

a delay module for adaptively computing at least one equalization delay parameter; and

an equalizer module for adaptively computing at least one time domain equalizer filter coefficient based on the equalization delay parameter.

13. The system of claim 12, wherein an overall channel impulse response length is shortened within a given target length.

14. The system of claim 12, wherein the delay module further comprises:

a cross-correlation module for computing an estimate cross-correlation function.

15. The system of claim 14, further comprising:

a defining module for defining a variable as an argument maximizing an absolute value of the cross-correlation function wherein the variable represents a peak location for the absolute value of the cross-correlation function.

16. The system of claim 15, further comprising:

a selection module for selecting an equalization delay as a function of the variable.

17. The system of claim 12, wherein the equalizer module further comprises:

a minimizing module for minimizing mean square error criterion.

18. The system of claim 12, wherein the equalizer module further comprises:

an implementing module for implementing one or more of training sequences and received sequences.

19. The system of claim 18, wherein the training sequences comprise consecutive samples of a received signal.

20. The system of claim 12, wherein the time domain equalizer filter is a sample spaced finite impulse response filter.

21. The system of claim 12, wherein the time domain equalizer filter is a fractionally spaced finite impulse response filter.

22. The system of claim 12, wherein the time domain equalizer filter minimizes one or more of energy inter symbol interference and inter channel interference.